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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/817,495 | 04/01/2004 | Guy F. Hudson | 500155.07 | 2315 |

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| EXAMINER | |
|---|---|
| MACARTHUR, SYLVIA | |
| **ART UNIT** | **PAPER NUMBER** |
| 1763 | |

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/817,495 | HUDSON, GUY F. | |
| | Examiner | Art Unit | |
| | Sylvia R. MacArthur | 1763 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *70-100* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *70-100* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 70, 71, 73, 85, 86, 90, and 91 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi et al (US 5,647,989).

Regarding claim 70: Hayashi et al teaches an apparatus and method for abrasive particle recovery. The apparatus of Hayashi et al illustrates in Fig. 1, a planarizing machine 15 which includes a table for carrying a polishing pad, a carrier assembly wherein the carrier head is translatable with the substrate assembly across the pad. The apparatus further comprises a slurry manufacturing assembly with a first feed line (line 7), a second feed line 11, a first removal unit 1, a combination feed line (exiting tank 4), and a slurry dispenser 17.

Regarding claim 71: The first removal unit comprises a first filtration unit (1).

Regarding claims 73 and 91: A second filter 2 is illustrated in Fig. 1.

Regarding claim 85: The apparatus further comprises a mixing unit (30).

Regarding claim 90: See the rejection of claims 70 and 85.

3. Claims 70, 71, 85, 86, and 90 are rejected under 35 U.S.C. 102(e) as being anticipated by Iida et al (US 6,106,728).

Iida et al teaches an apparatus for manufacturing CMP slurry.

Regarding claim 70: Fig. 1 illustrates a planarizing machine 1 which includes a table for carrying a polishing pad, a carrier assembly wherein the carrier head is translatable with the substrate assembly across the pad. The apparatus further comprises a slurry manufacturing assembly with a first feed line (Fp line), a second feed line 54, a first removal unit 4, a combination feed line (S leaving tank 52, and a slurry dispenser 301.

Regarding claim 71: The first removal unit comprises a first filtration unit (filter 4) see col. 5 lines 18-27.

Regarding claim 85: The apparatus further comprises a mixing unit (tank 52).

Regarding claim 86: A turbulent zone (provided by agitator 53) is provided to mix the combined flow.

Regarding claim 90: See the rejection of claims 70, 85, and 86.

4. Claims 72, 75, and 76 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iida et al (US 6,106,728).

Regarding claim 72: Iida teaches that filter 4 removes particles of 10-200 microns. This citation anticipates greater than 1.0 micron.

Alternatively, Iida et al teaches another filter 7 that removes particles greater than 0.5 microns. The motivation to provide a filter that removes particles greater than 1.0 micron is that the filter particle size is chosen based on of the particle distribution of the slurry, which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a filter in the apparatus of Iida et al that removes particles of 1.0 microns and greater.

Regarding claim 75: Iida teaches that filter 4 removes particles of 10-200 microns. This citation anticipates greater than 0.8 microns.

Alternatively, Iida et al teaches another filter 7 that removes particles greater than 0.5 microns. The motivation to provide a filter that removes particles greater than 0.8 microns is that the filter particle size is chosen based on of the particle distribution of the slurry, which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a filter in the apparatus of Iida et al that removes particles of 0.8 microns and greater.

Regarding claim 76: Iida teaches that filter 4 removes particles of 10-200 microns. This citation anticipates greater than 0.3microns.

Alternatively, Iida et al teaches another filter 7 than removes particles greater than 0.5 microns. The motivation to provide a filter that removes particles greater than 0.3 microns is that the filter particle size is chosen based of the particle distribution of the slurry, which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in

the art at the time of the claimed invention to provide a filter in the apparatus of Iida et al that removes particles of 0.3 microns and greater.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 73,74,77-84, 87-89 and 91-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al (US 6,106,728) in view of Hayashi et al (US 5,647,989).
The teachings of Iida et al were discussed above.

Regarding claim 73 and 91: Iida fails to teach a second filtration unit coupled to the second feed line.

Hayashi et al teaches a method for recovering abrasive particles. The apparatus used comrpsies a filter 1 and filter 2. The motivation to modify the apparatus of Iida et al with the second filter of Hayashi et al is to better control the particle distributions of the slurry. Note the use of filters are known in process control. The apparatus of Iida has a filter 4 on the first feed. The mere duplication of parts has no patentable significance unless and new and unexpected

result occurs. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the second filter of Hayashi on feed line 54 of Iida et al as it better control the particle distribution of line S which would ultimately control the overall particle distribution of the slurry supplied to the apparatus of Iida.

Regarding claims 74-84 and 92-97: Neither Iida not Hayashi et al teaches the particle size of claims 74-84 and 92-97 of the claimed invention. However, the particle size distribution of the filter depends upon the particle size of the slurry feeds which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in the art to provide filters that meets the particle size requirements of claims 74-84 and 92-97.

Regarding claims 87-89 and 98-100: Iida et al provides a volume control unit in tank 6 via the concentration meter 62. As discussed in col.7 lines 47-62.

The specific mixing ratio of the mixture is not taught however the apparatus of Iida et al is obviously able to perform the ratios cited in the claims so that the fluctuation in concentration will not change the viscosity of the slurry and hinder a stable polishing process. In the cited passage Iida et al discusses the feed is changed to maintain a desired concentration; affecting the volume or volume ratio of feeds to the tank performs this change. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a volume control unit in tank 6 of Iida et al that meets the desired mixing result.

7. Claims 72,74-88 and 92-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al in view of Iida et al.

The teachings of Hayashi et al were discussed above.

Regarding claims 74-84 and 92-97: Hayashi fails to teach the a filter for the particle size cited in the claims mentioned.

Iida et al teaches Regarding claim 72: Iida teaches that filter 4 removes particles of 10-200 microns. This citation anticipates greater than 1.0 micron.

Alternatively, Iida et al teaches another filter 7 that removes particles greater than 0.5 microns. The motivation to provide a filter that removes particles greater than 1.0 micron is that the filter particle size is chosen based on of the particle distribution of the slurry, which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a filter in the apparatus of Iida et al that removes particles of 1.0 microns and greater.

Regarding claim 75: Iida teaches that filter 4 removes particles of 10-200 microns. This citation anticipates greater than 0.8 microns.

Alternatively, Iida et al teaches another filter 7 that removes particles greater than 0.5 microns. The motivation to provide a filter that removes particles greater than 0.8 microns is that the filter particle size is chosen based on of the particle distribution of the slurry, which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a filter in the apparatus of Iida et al that removes particles of 0.8 microns and greater.

Regarding claim 76: Iida teaches that filter 4 removes particles of 10-200 microns. This citation anticipates greater than 0.3microns.

Alternatively, Iida et al teaches another filter 7 than removes particles greater than 0.5 microns. The motivation to provide a filter that removes particles greater than 0.3 microns is that the filter particle size is chosen based of the particle distribution of the slurry, which is an optimizable processing parameter. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a filter in the apparatus of Iida et al that removes particles of 0.3 microns and greater.

Regarding claims 87 and 98: Hayashi fails to teach the specific mixing ratio of the mixture.

Iida et al provides a volume control unit in tank 6 via the concentration meter 62. As discussed in col.7 lines 47-62.

The specific mixing ratio of the mixture is not taught however the apparatus of Iida et al is obviously able to perform the ratios cited in the claims so that the fluctuation in concentration will not change the viscosity of the slurry and hinder a stable polishing process. In the cited passage Iida et al discusses the feed is changed to maintain a desired concentration; affecting the volume or volume ratio of feeds to the tank performs this change. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a volume control unit in tank 6 of Iida et al that meets the desired mixing result

***Response to Arguments***

8. Applicant's arguments with respect to claims 7-100 have been considered but are moot in view of the new ground(s) of rejection. The prior art of Iida et al was clarified in that a different first and second feed line were discussed. The prior art of Hayashi et al was discussed to teach a first and second filter on a first and second feed line.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sylvia R MacArthur

Patent Examiner

Art Unit 1763

March 20, 2006